

## **Amendments to the Claims:**

### **Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. to 9. (cancelled)

10. (Previously Presented) Cantilever assembly for scanning a sample, comprising a cantilever having a length of  $1\mu\text{m}$  to  $100\mu\text{m}$  and having a cantilever tip, the cantilever having a front side facing the sample and a backside facing away from that sample, said cantilever being mounted to a rigid support and being provided on said back side facing away from the sample with an area of a high reflectance material, this area having a boundary sloping towards said support, wherein extensions ( $c$ ,  $\Delta c$ ) of the area and the boundary towards said support fulfill the condition

$$c/\Delta c \geq 1,$$

wherein

$c$  denotes an extension of the area of the high reflectance material in a direction towards the support, and

$\Delta c$  denotes an extension of the sloped boundary of the area of the high reflectance material in a direction towards the support.

11. (Previously Presented) Cantilever assembly according to claim 10, wherein the extension ( $c$ ) of the area of the high reflectance material towards the support is in the range of  $0.5\mu\text{m}$  to  $10\mu\text{m}$ .

12. (Previously Presented) Cantilever assembly according to claim 11, wherein the length of the cantilever is in the range of  $3\mu\text{m}$  to  $20\mu\text{m}$ .

13. (Previously Presented) Cantilever assembly according to claim 11, wherein the

extension (c) of the area of the high reflectance material towards the support is in the range of 1  $\mu\text{m}$  to 6  $\mu\text{m}$ .

14. (Previously Presented) Cantilever assembly according to claim 10, wherein the support is provided with a sharp edge that is located a distance (l) from a back side of the cantilever tip, the distance (l) being determined such that during application of the high reflectance material the area on the back side of the cantilever tip and the sloping boundary are formed.

15. (Previously Presented) Cantilever assembly according to claim 11, wherein the support is provided with a sharp edge that is located a distance (l) from a back side of the cantilever tip, the distance (l) being determined such that during application of the high reflectance material the area on the back side of the cantilever tip and the sloping boundary are formed.

16. (Previously Presented) Cantilever assembly for scanning a sample, comprising a cantilever having a length of 1  $\mu\text{m}$  to 100  $\mu\text{m}$  and having a cantilever tip, the cantilever being mounted to a rigid support and being provided on its back side facing away from the sample with an area of a high reflectance material, this area having a boundary sloping towards said support, wherein extensions (c,  $\Delta c$ ) of the area and the boundary towards said support fulfill the condition

$$c/\Delta c \geq 1,$$

wherein

c denotes an extension of the area of the high reflectance material in a direction towards the support, and

$\Delta c$  denotes an extension of the sloped boundary of the area of the high reflectance material in a direction towards the support,

wherein the support further comprises a guidance and calibration structure for guiding and calibrating an optical tracking system in focusing on the area of the high reflectance material.

17. (Previously Presented) Cantilever assembly according to claim 10, wherein that portion of the support to which the cantilever is attached has a recessed shape, said recessed shape narrowing in a direction towards the cantilever.

18. (Previously Presented) Cantilever assembly according to claim 17, wherein the recessed shape is irregularly hexagonal.

19. (Previously Presented) Cantilever assembly according to claim 10, wherein the cantilever comprises a step-like portion which is arranged near that end of the cantilever which is attached to the support, said step-like portion substantially increasing a thickness of the cantilever on a front side of the cantilever.

20. (Previously Presented) Cantilever assembly according to claim 10, wherein said support comprises at least two steps, the steps being provided with an edge, wherein the edge of the first step is located such that during application of the high reflectance material the area on the back side of the cantilever tip and the sloping boundary are formed and wherein the edge of the second step is located such that it does not obstruct application of the high reflectance material.

21. (Previously Presented) Process for manufacturing a cantilever assembly for scanning a sample, said process comprising  
providing a cantilever having a front side facing the sample and a backside facing away from that sample and having a cantilever tip and having a length of 1 μm to 100 μm and being mounted on a rigid support

applying onto said back side of the cantilever facing away from the sample, from a source (S), a high reflectance material to form an area of high reflectance material, wherein the area has a sloping boundary towards said support, wherein extensions (c, Δc) of the area and the boundary towards said support fulfill the condition

$$c/\Delta c \geq 1,$$

wherein

$c$  denotes an extension of the area of the high reflectance material in a direction towards the support, and

$\Delta c$  denotes an extension of the sloped boundary of the area of the high reflectance material in a direction towards the support, wherein a sharp edge of the support of the cantilever assembly is used in order to limit the extensions ( $c$ ,  $\Delta c$ ) of the area and of the boundary towards the support.

22. (Previously Presented) Process for manufacturing a cantilever assembly for scanning a sample, said process comprising

providing a cantilever having a cantilever tip and having a length of  $1\mu\text{m}$  to  $100\mu\text{m}$  and being mounted on a rigid support

applying onto a back side of the cantilever facing away from the sample, from a source (S), a high reflectance material to form an area of high reflectance material, wherein the area has a sloping boundary towards said support, wherein extensions ( $c$ ,  $\Delta c$ ) of the area and the boundary towards said support fulfill the condition

$$c/\Delta c \geq 1,$$

wherein

$c$  denotes an extension of the area of the high reflectance material in a direction towards the support, and

$\Delta c$  denotes an extension of the sloped boundary of the area of the high reflectance material in a direction towards the support, wherein a sharp edge of the support of the cantilever assembly is used in order to limit the extensions ( $c$ ,  $\Delta c$ ) of the area and of the boundary towards the support, wherein the edge of the support is located at a distance from the area on the back side of the cantilever tip and wherein the source (S) of the high reflectance material is arranged at a distance (L) from the edge of the support and has an opening having a diameter (d), through which the high reflectance material is applied, and wherein the distance (l) from the area on the back side of cantilever tip and the edge of the support and a distance (L) from the source to the edge of the support are determined such, that

$$\Delta c / l = d / L$$

wherein

$\Delta c$  denotes as above,

$l$  denotes a distance of the edge of the support from the area of the high reflectance material,

$d$  denotes a diameter of an opening of the source (S) through which the high reflectance material is applied,

and

$L$  denotes a distance between the source (S) and the edge of the support.

23. (Currently Amended) Cantilever assembly for scanning a sample, comprising a cantilever having a cantilever tip, the cantilever being mounted to a rigid support, wherein a portion of the support has a stepwise recessed flank profile with a width narrowing in a direction towards the cantilever, wherein the cantilever is mounted to the rigid support via an attachment, wherein the attachment is executed via a material which is the same as the cantilever and the rigid support, ~~or wherein the attachment is a silicon oxide layer while the cantilever and rigid support are made from silicon.~~

24. (Previously Presented) Cantilever assembly according to claim 23, wherein the width narrowing in the direction towards the cantilever takes form of an irregular hexagon.

25. (Previously Presented) Cantilever assembly according to claim 23, wherein a back side of the cantilever facing away from the sample comprises an area of a high reflectance material, which area has a boundary sloping towards the support.

26. (Currently Amended) Cantilever assembly for scanning a sample, comprising a cantilever having a cantilever tip, the cantilever having a back side and a front side opposite said back side and the cantilever being mounted to a rigid support on the back side, wherein the cantilever comprises a step-like portion on its front side near where the cantilever is attached to the support, the step-like portion substantially increasing a thickness of the cantilever, wherein the cantilever is attached to the rigid support via an attachment, wherein the attachment is executed via a material which is the same as the cantilever and the rigid support, ~~or wherein the attachment is a silicon oxide layer while the cantilever and rigid support are made from silicon.~~

27. (Previously Presented) Cantilever assembly according to claim 26, wherein a back side of the cantilever facing away from the sample comprises an area of a high reflectance material, which area has a boundary sloping towards the support.

28. (Cancelled)

29. (Previously Presented) Cantilever assembly according to claim 26, wherein the cantilever abuts against the support via an attachment location at the back side of the cantilever.